



**ENGINEERING OPERATIONS COMMITTEE  
MEETING MINUTES  
SEPTEMBER 7, 2006 – 9:00 A.M.  
MULTI-MODAL CONFERENCE ROOM**

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|                 |                                      |   |                            |
|-----------------|--------------------------------------|---|----------------------------|
| <i>Present:</i> | J. Friend<br>J. D. Culp<br>C. Bleech | B. J. O'Brien<br>C. Roberts<br>E. Burns | J. W. Reincke<br>T. Fudaly |
| <i>Absent:</i>  | L. E. Tibbits<br>T. Anderson         | J. Polasek                              | M. VanPortFleet            |
| <i>Guests:</i>  | M. Bott                              | T. Frake                                | C. Torres                  |

**OLD BUSINESS**

**1. Approval of the Minutes of the August 3, 2006, Meeting – L. Tibbits**

The August 3, 2006, meeting minutes are approved.

**NEW BUSINESS**

**1. Approving the Use of Cable Median Barrier – C. Torres**

Cable barriers have been shown to be a cost effective tool in the prevention of median crossover crashes. Several states have installed cable median barrier with positive results.

There are two basic types of cable barrier; low-tension systems and high-tension systems. Both systems are effective in the prevention of median crossover crashes. The low tension system is non-proprietary and usually less expensive to install. However, the system generally requires more maintenance. The high tension system is proprietary with several different systems that meet NCHRP 350, TL-3 criteria. The maintenance of this system is generally less than that of the low tension system. Both the low and high tension systems can improve safety on MDOT roadways.

**ACTION:** Approve the use of cable median barrier with minor revisions to the MDOT cable median barrier guidelines and special provision. Develop maintenance guidelines for cable median barrier systems for EOC review and approval.

**2. Recommendation on the Use of Countdown Pedestrian Signals – M. Bott**

MDOT's current standard signal layout uses traditional pedestrian indications. Countdown pedestrian signals, which display the amount of time remaining for a pedestrian to safely complete a crossing, have been used in other parts of the country.

**ACTION:** The use of countdown pedestrian signals at signalized trunkline locations in central business districts, established school routes, and other high pedestrian user locations is approved.

### 3. Pavement Selections, US 23 Reconstruction, CS 04032, JN 74862 – B. Krom

The reconstruction alternates considered were an HMA pavement (Alternate 1 – equivalent uniform annual cost [EUAC] \$50,376/mile) and a jointed plain concrete pavement (Alternate 2 - EUAC \$64,321/mile). A life cycle cost analysis was performed and Alternate 1 was approved based on having the lowest EUAC. The pavement design and cost analysis are as follows:

|         |   |
|---------|---|
| 1.5"    | HMA, 5E3, Top Course (mainline & shoulders)     |
| 2"      | HMA, 4E3, Leveling Course (mainline & shoulder) |
| 3"      | HMA, 3E3, Base Course (mainline)                |
| 6"      | Aggregate Base (mainline)                       |
| 9"      | Aggregate Base (shoulders)                      |
| 18"     | Sand Subbase                                    |
| 4" dia. | Subbase Underdrain System                       |
| 30.5"   | Total Section Thickness                         |

|  |                |
|--|----------------|
| Present Value Initial Construction Costs | \$684,014/mile |
| Present Value Initial User Costs         | \$134,140/mile |
| Present Value Maintenance Costs          | \$169,239/mile |
| Equivalent Uniform Annual Cost           | \$50,376/mile  |

(Signed Copy on File at C&T)

Brenda J. O'Brien, Secretary  
Engineering Operations Committee

BJO:kar

|     |                         |                    |                        |
|-----|-------------------------|--------------------|------------------------|
| cc: | K. Steudle              | S. Mortel          | J. Steele (FHWA)       |
|     | J. Shinn                | D. Jackson         | R. Brenke (ACEC)       |
|     | L. Hank                 | W. Tansil          | G. Bukoski (MITA)      |
|     | EOC Members             | D. Wresinski       | D. DeGraaf (MCPA)      |
|     | Region Engineers        | C. Libiran         | D. Hollingsworth (MCA) |
|     | TSC Managers            | R. J. Lippert, Jr. | J. Becsey (APAM)       |
|     | Assoc. Region Engineers | T. L. Nelson       | M. Newman (MAA)        |
|     | T. Kratofil             | T. Phillips        | J. Murner (MRPA)       |
|     | M. DeLong               | K. Peters          | G. Naeyaert (ATSSA)    |
|     | B. Shreck               | J. Ingle           | C&T Staff              |